Lyme Disease Surveillance in Wisconsin, 2005 – Final Report

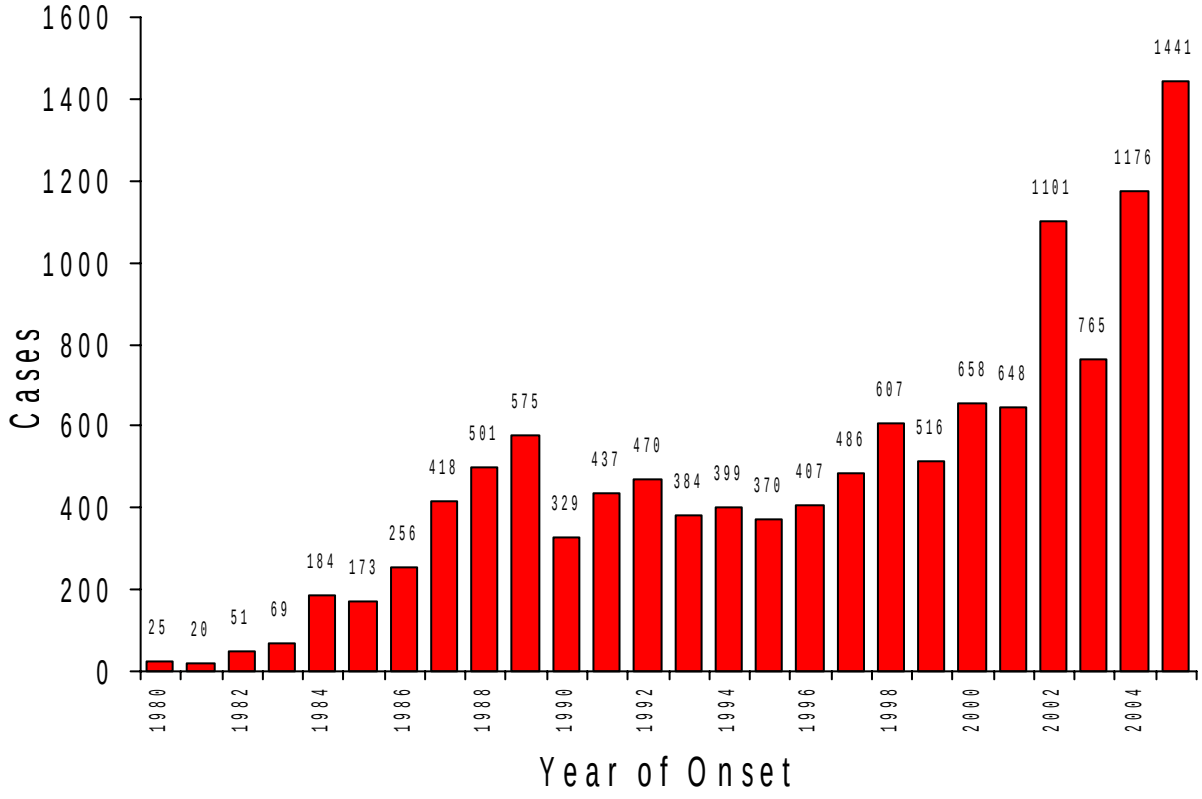
Introduction

Statewide surveillance for Lyme disease in Wisconsin has been conducted since 1980. Cases are reported based on the surveillance case definition provided by the Centers for Disease Control and Prevention (CDC) that defines a Lyme disease case by one of two criteria: 1) Physician-diagnosed erythema migrans (EM) ≥5cm in diameter; or 2) A positive serologic test or culture AND ≥1 late manifestation: joint swelling (not only joint pain), Bell's palsy or other cranial neuritis, radiculoneuropathy, lymphocytic meningitis, encephalitis/encepahalomyelitis with *Borrelia burgdorferi* titer in CSF higher than serum, or 2nd or 3rd degree atrioventricular block.

Statewide Case Count and Demographics

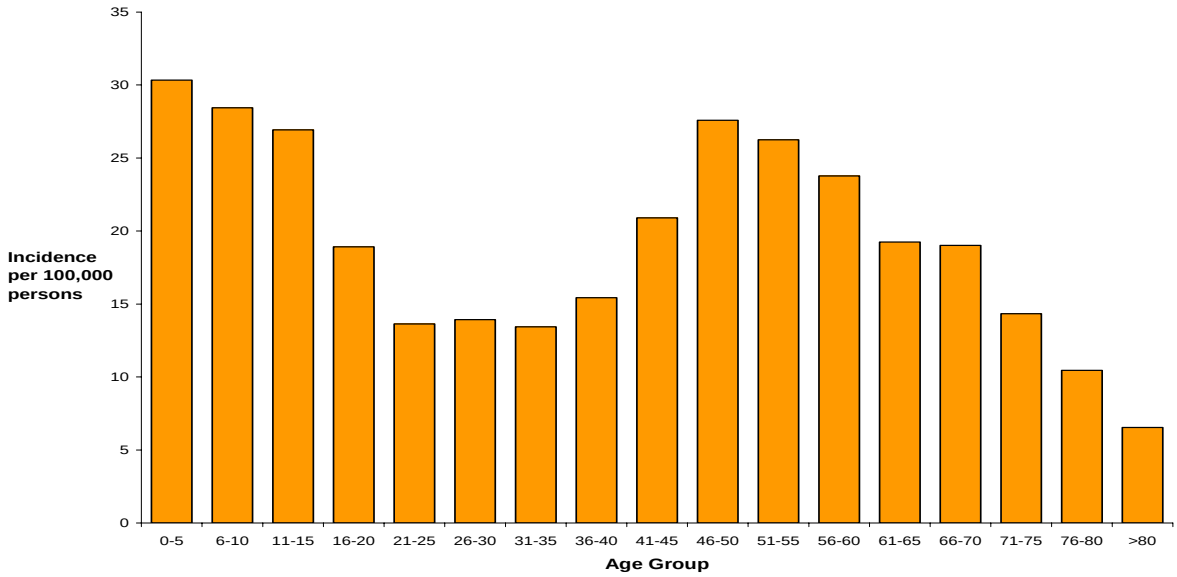
In 2005, 1,441 cases of Lyme disease meeting the CDC surveillance case definition were reported to the Wisconsin Division of Public Health (WDPH). This 2005 total was a 23% increase from the 1,176 cases reported in 2004 and reflects both a record high for the state and a recent trend of increasing cases reported in Wisconsin [Figure 1].

Figure 1. Reported Lyme disease cases reported to the Wisconsin Division of Public Health, 1980-2005



Of the 1,441 case patients, 832 (58%) were male and 609 (42%) female. Median age of cases was 44 years (mean 40 years, range <1-99 years), with highest age-specific incidence among young children and adults between 40-60 years of age [Figure 2].

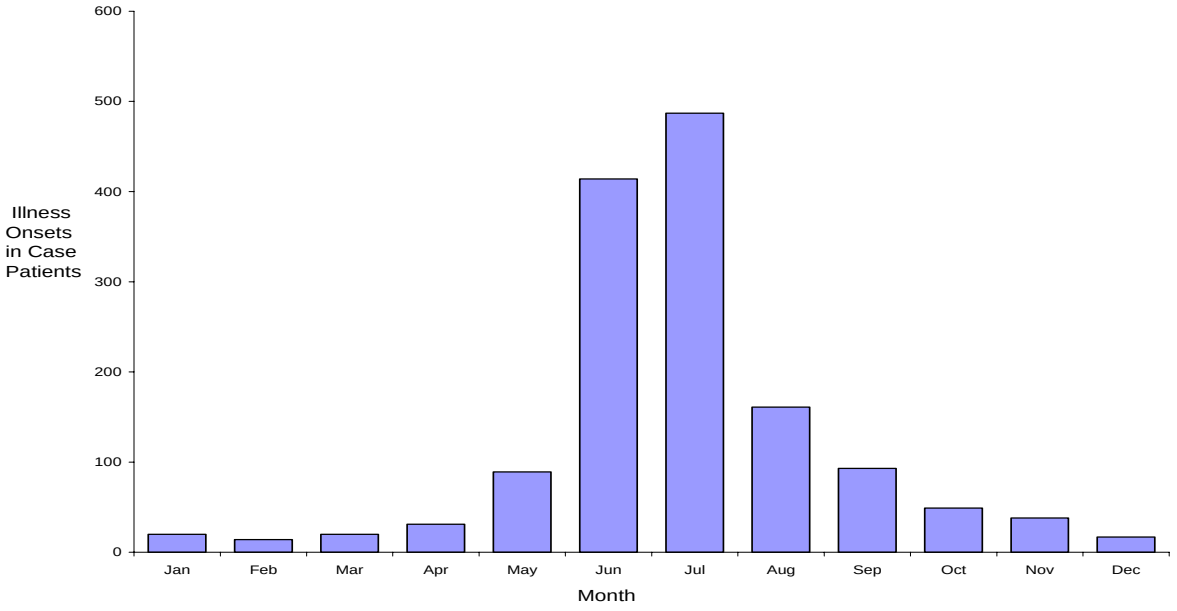
Figure 2. Lyme disease incidence by age group for cases reported to the Wisconsin Division of Public Health, 2005



Dermatologic, Rheumatologic, Neurologic and Other Case Patient Data

Physician-diagnosed EM >5cm in diameter was reported in 1,069 (74%) of the 1,441 case patients. Regarding late manifestations, joint swelling was reported in 420 (29%) case patients, Bell's palsy/cranial neuritis in 108 (7%), radiculoneuropathy in 28 (2%), 2nd or 3rd degree atrioventricular block in 13 (1%), lymphocytic meningitis in 9 (<1%), and encephalitis/encepahalomyelitis in 7 (<1%) case patients. Sixty-four (4%) of patients were hospitalized for their illness. Three case patients were pregnant at the time of illness onset. Illness onsets for case patients occurred throughout the year but were disproportionately frequent in June and July [Figure 3].

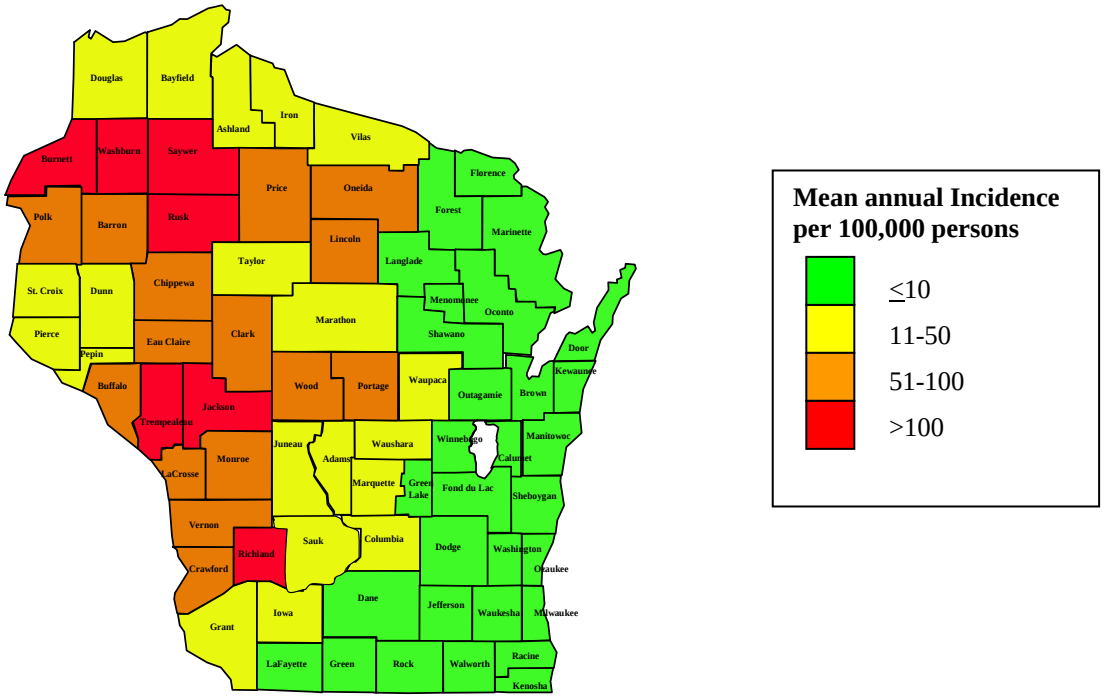
Figure 3. Month of illness onset for Lyme disease case patients reported to the Wisconsin Division of Public Health, 2005



Lyme Disease Incidence and Geographic Distribution

Statewide incidence of reported Lyme disease cases in 2005 was 25.8 cases per 100,000 persons. Mean annual incidence from 2001 to 2005 was markedly higher in the western part of the state, with seven western Wisconsin counties reporting more than 100 cases per 100,000 persons [Figure 4].

Figure 4. Mean annual Lyme disease incidence per 100,000 persons by county of residence, 2001-2005



Surveillance in 2006

Lyme disease surveillance activities will continue during 2006 using the CDC surveillance case definition. As a reminder, the CDC surveillance case definition is for disease surveillance purposes and not for clinical diagnosis of patients. Case reports for patients meeting the surveillance case definition should be submitted to WDPH with a completed Wisconsin Lyme Disease Case Report Form (CDES #107). This form is available on the EPI NET and is also attached with this report [Attachment A]. Two items have been removed from this form for the purposes of reporting in 2006: 1) "joint pain" from the rheumatologic section of the form, and 2) Lyme disease vaccination history. These two items are no longer relevant with regard to Lyme disease surveillance and reporting in Wisconsin. In addition, the Lyme Disease Surveillance Case Definition sheet [Attachment B] has been edited so that is easier to use, even though the case definition has not changed.

Prevention

Prevention efforts primary designed to reduce exposure to ticks remain the best defense against Lyme disease, especially for persons living in or visiting highly endemic areas of the state. These precautions are most important during May, June, and July, the peak months for infection. CDC currently recommends the following to prevent Lyme disease:

1) *Tick avoidance*: If possible, avoid wooded and bushy areas with high grass and lots of leaf litter since ticks prefer these areas. In such areas, if possible stay in the center of a cleared trail to avoid contact with overgrown grass, brush, and leaf litter.

2) *Personal protection*: Use insect repellant with 20-30% DEET on adult skin and clothing to prevent tick bites. Permethrin is also effective against ticks and lasts for days to weeks but should only be applied to clothes and not directly to the skin. Be sure to follow the label directions whenever using repellants. Wear long sleeves, long pants, and long socks to keep ticks on the outside of clothing. Tuck shirts into pants and pants into shoes or socks to keep ticks on the outside of clothing. Light clothing will help spot ticks. If one is outside for an extended period of time then tape pant legs where pants and socks meet so that ticks cannot crawl under clothes.

3) *Check skin and remove ticks*: Perform daily tick checks after being outdoors, even in one's own yard. Remove any ticks from clothing before going inside. Inspect all parts of the body carefully, especially the armpits, scalp, and groin. Ticks should be immediately removed with fine-tipped tweezers, as close to the skin as possible. To kill ticks on clothing that may have been missed, clean clothes using hot water and dry using high heat for at least one hour. An infected tick must be attached for $\geq$24 hours to successfully transmit *B. burgdorferi* to humans.

4) *Tick control*: Create tick-safe zones around homes, parks and recreational areas. Clear overgrown grass, brush and leaf litter from the premises or trails. Use wood chips or gravel as a barrier between lawns and wooded areas. Mow lawns frequently and remove cut grass and leaves. Keep tables, swing sets, play equipment, etc. away from woods and trees. Discourage deer intrusion by constructing barriers and not feeding them. Remove woodpiles or stack wood neatly in dry areas away from houses to prevent rodent harborage. Acaricides (pesticides that kill ticks) may be helpful to use during spring but local health and wildlife agencies or a professional pesticide company should be consulted prior to use.

Lyme disease is more easily treated when detected early. Potentially exposed persons should be educated to recognize the signs and symptoms of Lyme disease and promptly see a health care provider if such signs and symptoms develop. More detailed information on Lyme disease is available at the CDC Division of Vector-borne infectious Diseases website: http://www.cdc.gov/ncidod/dvbid/lyme/index.htm

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